REMARKS

Applicants, their principal representatives in Germany, and the undersigned have carefully reviewed the first Office Action on the merits of February 9, 2009 in the subject U.S. patent application, together with the prior art cited and relied on in the rejections of the claims. In response, the formal drawings and various ones of the claims have been amended. It is believed that the claims which are now pending in the subject application are patentable over the prior art cited and relied on in the rejections. Reexamination and reconsideration of the application and allowance of the claims is respectfully requested.

The subject invention is directed to cylinders or rollers that are usable in rotary printing presses. In a number of instances, it is important to be able to control the temperature of the surfaces of these rollers and/or cylinders. Inking systems transfer ink to forme cylinders which then transfer the ink to transfer or blanket cylinders in conventional offset printing processes. Often, the viscosity of the ink is to be maintained within a specified range to accomplish optimum printing. That ink viscosity is a function of a variety of factors, including temperature. The ink temperature may start out at a first level in the ink fountain but may change as the ink is transferred, split and applied to the forme cylinders. Variations in printing apparatus speed, in plant conditions and the like also have an effect on ink temperature.

For these reasons, as well as for other reasons, it is important that the surface temperature of the various rollers and cylinders in a printing press be controllable. One way to accomplish this control is to circulate a heat transfer fluid through the rollers or

cylinders. To accomplish such a transfer of a heat exchange fluid through the various rollers or cylinders, each one of those rollers or cylinders must have some type of interior chamber that the heat exchange fluid can flow through. If only one roller or cylinder had to be temperature controlled or if the rollers or cylinder whose temperatures were to be controlled were either stationary or were rotating at a slow speed, the provision of a chamber for receipt of the heat exchange fluid would not be difficult to accomplish. However, printing press cylinders and rollers are provided in printing presses in large numbers and are caused to rotate at high rates of speed. The flowing of a heat exchange fluid through such cylinders and rollers, while ensuring the structural integrity of the cylinders and rollers and without disrupting the balance of these cylinders or rollers becomes a difficult task.

The subject application discloses several embodiments of rollers and/or cylinders with passageways that are usable to conduct a heat exchange fluid through the body of the respective roller or cylinder. In several of these embodiments, the passageways are formed during a casting process which is usable to form the body of the rotating body. Figs. 1 and 2 for example, depict a first embodiment in which either axially extending or helically extending passages are formed in the body of the rotating body during its casting. Fig. 3 is directed to a second embodiment in which semi-cylindrical channels can be formed in the interior of the body of the rotating cylinder or roller. Figs. 4 and 5 depict a two component assembly that includes a base body 17 and an outer body 19. In the Fig. 4 configuration, the outer body is provided with a plurality of axially extending, interior hollow spaces 21. In the Fig. 5 embodiment, the outer surface of the

base body is provided with a plurality of similar axially extending hallow spaces.

A different embodiment is shown in Figs. 6a and 6b which is essentially a lost wax casting process. There are provided strips 26 of a heat liquefiable material that are placed in an annular space between the base body 17 and the outer body 19. The portion of the annular space not occupied by the strips 26 is then filled with a material which will harden as it sets, such as a two-component resin. Once that resin has set, the rotary body can be heated to an elevated temperature sufficient to liquify the material strip 26 but not sufficient to liquify the two-component resin.

Fig. 7 depicts yet another embodiment of the subject invention in which a shaft 31 of a material which has a high resistance to stress, and which also has relatively great physical strength, is surrounded by a barrel 02 formed of a casting material. The shaft 31 is provided with journals 33, each of which has a central, axially extending passage. Radial bores 34 are formed in the shaft. These are alignable with passageways which can be formed in the castable barrel material 02 during its casting. The result is again a rotatable body that has passageways through which a heat exchange fluid can flow.

Another embodiment of a rotatable body in accordance with the subject invention is depicted in Figs. 9-11 and is described in detail in paragraphs 0065 and 0068 of the Substitute Specification. It is to this embodiment of the present invention that the claims which are currently pending in the subject application are directed to.

As may be seen in Fig. 9, there is provided a base body 17 which has a central fluid inflow channel 08 extending along its longitudinal axis of rotation. A plurality of

radial bores 34 at both ends of the base body 17 provide a flow path into, through and back out of the rotatable body. An outer body 19 is supported by the base body 17 and is spaced from the base body by one or more annular or cylindrical sleeves, generally at 38. One of these sleeves is depicted by itself in Fig. 11 of the drawings.

The base body 17 has a smooth outer surface and the cylindrical sleeve is sized so that it will slide onto that outer surface. The outer body has a smooth inner surface which is dimensioned to be slidable over the cylindrical sleeve. The base body and the outer body thus sandwich the intermediate sleeve.

As may be seen more clearly in Fig. 11, the cylindrical sleeve 38 has a plurality of hollow spaces 21 that are formed on it adjacent the outer surface. These hollow spaces or channels 21 are separated from each other by interposed strips 38. While the hollow spaces 21 are depicted in Fig. 11 as being axially extending, it will be understood that they could be helical or could have other shapes.

The hollow spaces 21 in the cylindrical sleeve are closed by the inner surface of the outer body. It is to be noted that these hollow spaces 21 are preferably formed in the cylindrical sleeve against the outer surface and thus directly underlying the inner surface of the outer body 19, which may be cylindrical pipe. The outer body could also be provided with one or more axially extending grooves on its outer surface, in a fashion such as is depicted at 20 in Figs. 4 and 5. As is known in the art, such grooves are usable to receive plate end holding and clamping assemblies. These are required when the rotating body is used as a forme cylinder or as a blanket cylinder.

The cylindrical sleeve is preferably made of an insulative material. Any number

of materials, such as a plastic material, which is injection-molded, can be used to make the sleeve or sleeves 38. These sleeves 38 are preferably made of a thermally insulating material. The hollow spaces 21, which are situated on the outer surface of the sleeve or sleeves 39, and which form flow channels for the heat exchange fluid, are preferably found during the injection molding of the sleeves 38. They could also be cut into the exterior surface of the sleeve or sleeves 38 by a milling process or the like.

Several of the sleeves 38 can be assembled along the outer surface of the base body 17. Once they have been so assembled, and their individual hollow spaces or grooves 21 have been aligned, they can be secured in place by the use of a suitable glue, as described at paragraph 0068 of the Substitute Specification. The outer body 19 can there be slid over the intermediate sleeve or sleeves 38 so that the hollow spaces 21 in the aligned sleeves are covered. The outer body 19 is then secured in place by welding or by gluing.

The subject rotatable body, as depicted in Figs. 9-11 and as recited in currently pending independent claim 69, is not complicated in either construction or assembly. The base body 17 has a smooth, cylindrical outer surface. That outer surface is intimately in contact with the inner surface of the cylindrical sleeve or sleeves. Since the sleeve or sleeves are of a thermally insulative material, heat is not transmitted to the base body 17.

The outer body 19 is preferably in the form of a thin-walled tube or pipe. Its inner surface is in direct contact with the heat exchange fluid that is caused to flow through the hollow spaces 21. The outer body 19 is preferably slid or pushed onto the sleeve or

sleeves 38 and is held in place by material-to-material contact, such as welding or gluing.

The rotatable body as depicted in Figs. 9-11, and as set forth in the claims now pending in the subject application is easily fabricated and assembled yet is very efficient in transferring heat between the outer surface of the thin-walled outer body and the heat exchange fluid that is caused to flow through the hollow spaces 21. There is no need to machine the outer surface of the base body or the inner surface of the outer body. The cylindrical sleeve or sleeves slide onto the outer surface of the inner body and are easily secured in place. The finished rotatable body is better suited to accomplish its heat transfer duties than are prior art devices.

In the Office Action of February 9, 2009, claims 74 and 75 were rejected under 35 U.S.C. 112, first paragraph as failing to comply with the embodiment requirement. Those two claims have now been cancelled.

Claims 69-72, 105, 115 and 118 were rejected under 35 U.S.C. 103(a) as being unpatentable over DE 629,700 in view of U.S. Patent No. 3,143,637 to Rifenbergh. Claims 73 and 78 were rejected under 35 U.S.C. 103(a) as being unpatentable over DE 629,700 in view of Rifenbergh and further in view of DE 19 64 7067 to Klaus. Claim 76 was rejected over DE 629,700 in view of Rifenbergh and further in view of U.S. Patent No. 5,168,808 to Prem. Claim 77 was rejected over DE 629,700 in view of Rifenbergh and further in view of U.S. Published Patent Application No. 2002/0066491 to Lively. Claims 79, 81, 84, 122 and 121 were rejected as being unpatentable over DE 629,700 in view of Rifenbergh and further in view of U.S. Patent No. 6,810,800 to Schneider.

Claims 80 and 82 were rejected as being unpatentable over DE 629,700 in view of Rifenbergh and further in view of U.S. Patent No. 5,948,448 to Schmidt.

In response to the rejections set forth in the Office Action of February 9, 2009, independent claim 69 has been amended and various ones of the dependent claims have also been amended or cancelled. It is believed that the claims which are now pending in the application are patentable over the prior art cited and relied on, taken either singly or in combination.

Initially, claim 69 has been amended to direct it to the embodiment of the invention which is depicted in Figs. 9-11. During a review of these figures, it was noted that the sleeve in Fig. 11 was incorrectly identified as element 19 which is the outer body. The sleeve or sleeves is or are elements 38. Fig. 11 has been amended to correct that numbering error. Claim 69 has been amended to include the language of dependent claim 79 which recited that the thermal insulating material is a sleeve which is enclosed in a space between an outer surface of the base body and the inner surface of the outer body. The sleeve is provided with at least one temperature control medium flow channel and including at least one inflow and one outflow. That at least one channel is formed in an outer surface of the sleeve of thermal insulating material. The channel is insulated from the base body by the thermal insulating material. The rotating body, as recited in currently amended claim 69 is not obvious to one of skill in the art over any of the prior art cited and relied on, taken either singly or in combination.

Referring initially to the DE 629,700 reference, there is provided what appears to be a cylinder in a rotary offset printing machine, which is depicted generally at 1 in Fig.

1. The cylinder 1 is depicted in cross-section in Fig. 4. A review of Fig. 4 clearly shows the differences between the subject invention, as recited in currently amended claim 69 and the prior art document. In the DE 629,700 reference, there is shown in Fig. 4 a central roller body 34 which is overlaid with a layer of insulative material 33. A hollow housing 35 is placed atop the insulative material 33 and forms an annular area which is provided with a plurality of cooling coils 36.

The structure depicted in Fig. 4 of the DE 629,700 reference is the type of structure which the subject invention avoids. It is a complex arrangement of layers with separate sections of tubing. Assembly of a roller, such as the one depicted in Fig. 4 of DE 629,700 will be complicated and time-consulting. It does not provide a usable solution to the problem of how to control temperature in the outer surface portion of the roller. It is also to be noted that the roller depicted in DE 629,700 has a rather extensive circumferential area 38 which is not provided with the insulative material 33, the housing 35 and the pipes 36. It is not understood how such a roller or cylinder could rotate at any substantial speed.

The Office Action admits that the DE 629,700 reference does not show the formation of channels in an insulating material. It is quite clear that is the case. In the DE 629,700 reference, the cooling fluid is caused to flow through separate pipes 36 which are situated in a space 37 that is provided in an annular hollow housing 35.

Claim 69, as currently amended, recites the provision of a sleeve of a thermal insulative material enclosed in the space between the inner surface of the outer body and the outer surface of the inner body. That sleeve has at least one temperature

control medium flow channel in it and formed in the outer surface of the sleeve. The channel in the sleeve, as recited in claim 69 is thermally insulated for the base body by the thermal insulating material which makes up the sleeve. The DE 629,700 reference clearly does not show such a structure.

The teachings missing from the DE 629,700 reference are asserted in the Office Action as being provided by the secondary reference to Rifenbergh. It was asserted that Rifenbergh shows channels 14 being formed in a thermal insulating material 2. In response, it is initially noted that Rifenbergh is clearly directed to a panel arrangement that is to be hung from ceiling joists in a building. It seems difficult to assert that one of skill in the field of printing press structure would be apt to look to the structure of a ceiling panel for a building, such as a home, to provide any beneficial teachings. However, if the Rifenbergh patent were somehow to be combined with the device depicted in DE 629,700 reference, the result would still not be capable of rendering claim 69, as currently amended, obvious to one of skill in the art.

In the Rifenbergh reference, there is shows a suspended ceiling panel that includes an insulative panel 2. A metal foil 3 is attached to one reference of the insulative material 2 and is covered by a layer of a protective and itself insulative material 6. A plurality of channels 14 are formed in the insulative material 2. These are closed by the metal foil 3 and by the protective and insulative layer 6. The portion of the insulative panel 2 that carries the metal foil 3 and the channels 14 faces the interior of the room whose atmosphere is to be controlled.

It is not apparent to the undersigned how selected portions of the Rifenbergh

reference could be combined with the DE 629,700 reference, to arrive at the subject invention, as recited in currently amended claim 69 other than by having the benefit of the disclosure of the subject invention. If the insulative panel 2 of Rifenbergh were somehow to be substituted for the insulation 33 of DE 629,700, what would form the outer surface of the resultant roller? Would it be some piece of the housing 35, perhaps with or without the pipes 36? It is difficult imagine such a combination, generally and to further imagine how such a combination would result in an operable device. The selection of bits and pieces from a secondary reference, absent any teaching or suggestion of their use or reason for selection, other than that provided by the applicant's disclosure, is not supportable.

In the rejection of dependent claim 79, which has now been combined with independent claim 69, it was asserted that the Schneider reference, U.S. Patent No. 6,810,800 discloses a sleeve 02 with distribution channels 17 that is enclosed in a space underneath an outer body 03. The undersigned respectfully disagrees. As may be seen in the Schneider reference, the cylinder includes a cylinder base body 02. The outer surface of this base body is provided with at least one distribution control which is embodied as a spiral groove 17 in the circumferential surface of the cylinder base body. See claim 3, lines 45-48. If the cylinder is to be used as a forme cylinder, an outer cylinder body 03, which is placed over the cylinder base body 02, may be provided with a dressing or a covering end receiving conduit 22. This may be seen in Fig. 1. As discussed at column 7, lines 25-31, the forme cylinder can, instead of having a separate printing forme attached to it by end clamps, be provided with a sleeve. Such a

sleeve is slid over the outer body 03 and is a substitute for one or more printing formes. Such a sleeve 03 is not equivalent to a sleeve of insulative material which is placed in a space between an inner body outer surface and an outer body inner surface. The sleeve which is referred to in the Office Action is a printing sleeve. It is located on the exterior of the forme cylinder, not some place in the interior of the cylinder.

The Schneider reference shows a base body 02, not a sleeve as is asserted in the Office Action. The base body 02 is itself provided with the distribution channels 17. They are not provided in a printing sleeve that could be slid over a shift surface 21. The seizing on the word "sleeve" in the Schneider reference appears to be the result of computer data base searching, without a great deal of attention being given to the context in which the term is used. For these reasons, it is believed that independent claim 69, as currently pending, is not rendered obvious by the combination of references cited and relied on in its rejections.

All of the rest of the claims now pending in the subject application depend, either directly or indirectly form believed allowable, currently amended independent claim 69. All of these claims are also believed to be allowable. The various claims not elected for prosecution in the subject U.S. patent application have now been cancelled. Applicant again expressly reserve the right to file one or more divisional patent applications directed to those claimed inventions.

SUMMARY

One replacement sheet of drawings is being submitted herewith to correct a numbering error without the addition of new matter. Independent claim 69, and various ones of the dependent claims have been amended. It is believed that the claims now pending in the subject application are patentable over the prior art cited and relied on, taken either singly or in combination. Allowance of the claims, and passage of the application to issue is respectfully requested.

Respectfully Submitted,

Martin BECKER et al.
Applicants

JONES, TULLAR & COOPER, P.C.
Attorneys for Applicant

Douglas R. Hanscom
Reg. No. 26,600

May 11, 2009
JONES, TULLAR & COOPER, P.C.
Customer No. 23294
P.O. Box 2266 Eads Station
Arlington, Virginia 22202
Phone: (703) 415-1500
Fax: (703) 415-1508
E-mail: mail@jonestullarcooper.com
Attorney Docket: W1.1832 PCT-US